Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 26, 2009 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim47 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what structure is added to configure the two transport parts at different speeds. Clarification of this structure is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 44 is rejected under 35 U.S.C. 102(a) as being anticipated by Bonora et al. Bonora et al. US 6,494,308 discloses a material handling system capable of handling a

container with at least one wafer therein in a controlled environment to a processing device, said device comprising:

a conveyor transport section (10) including a drive track (12);

track elements (42) interfacing with a wafer container (8) for driving the container along said tracks;

wherein the track sections are modular with predetermined lengths and adapted to be joined together in a removable manner to form an extended track;

wherein each module has at least one of the track elements thereon.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,15-18-20,34,35-39,40-42 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al. in view of Lin et al and further in view of Mizokawa et al. Regarding claims 1,17,18-20,34 and 36- 42 Bonora et al. US 6,494,308 teaches a wafer process system comprising:

at least one processing tool for processing semiconductor wafers;

a container (8) for holding at least one wafer therein for transport to and from the processing tool;

a transport section (10) for connecting the processing tool with other devices within a fabrication facility;

the transport section is not vehicle based and has tracks (12,14) which directly interface with the container for movably supporting the container, and allowing the container to move relative to the various devices in the facility;

wherein the tracks have a motor (48) therein for aligning the container with various track sections and devices in the facility;

wherein said motor is capable of bidirectional movement of one container at the same time along a common section of the track;

wherein the container may be stopped at any predetermined location for access from the overhead lift;

wherein the layout of the system can be made to fit any location depending on the number of process devices as well as building layout. Bonora et al. do not teach an exact structure of the overhead transport system being used in their facility or bidirectional movement of containers along a common track section. Lin et al. US 2003/0198540 teaches a wafer processing facility comprising:

at least two stocking devices (30) each with an input/output of port;

a first overhead transport system for moving wafer containers (44) about the facility via a track(38) with a motorized carriage (36);

a second transport system (52) for moving containers between the stockers;

wherein the two transport sections are parallel at variable portions of their runs such that the two transport systems can be aligned by moving only one of said systems when the container is located at one of said variable locations. Lin et al. does not teach the opposite movement of two containers along a common track at the same time.

Mizokawa et al. US 6,863,485 teaches a first tracked section (11) for moving wafers therealong;

said tracked section serving a plurality of process devices for processing wafers;

said track comprising:

a rail (11a) for guiding a wafer carrier (13) therealong;

said carrier being driven by a solid state brushless linear motor comprising:

a drive coil (41) mounted to said track;

at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track;

wherein said track has a single motor that is capable of driving two containers along a track section in opposite directions substantially simultaneously.

It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. with the overhead transport as taught by Lin et al. in order to allow two types of transport to service each device in the fabrication plant without interfering with each other while maintaining a cooperative arrangement such that bottle necks can be more readily avoided in the facility, thereby increasing throughput of the system and to further provide the linear motor on the conveying section to reduce unwanted wear debris in the clean area.

Regarding claims 15 and 16 Bonora et al. further teach the transport system as having at least one shunt portion that can acts as a buffer for the containers on the track.

Regarding claim 35 Bonora et al. further teach that the track has intermediate portions remote from end portions of the track.

Regarding claim 41 Bonora et al. also teach the conveyor tacks as having intermediate portions with connections adapted to be joined together to form an adaptable overall transport system.

Regarding claims 42 Bonora et al. further teach a plurality of sensors (52) for sensing the position of a plurality of containers as they move along the conveyor.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al., Lin et al. and Mizokawa et al. as applied to claim 42 above, and further in view of Studer. Bonora et al., Lin et al. and Mizokawa et al. teach the limitations of claim 42 as above, they do not teach a commutation position sensor. Studer US 4,841,204 teaches a rotational motor with a commutation sensor for sensing the relative position of the rotor relative to a fixed stator in an electrical drive. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al., Lin et al. and Mizokawa et al. with a position sensor as taught by Studer in order to determine the position of a drive motor without requiring a separate sensing device by using a well known commutation sensor.

Regarding claim 47 It would have been obvious to one of ordinary skill in the art, at the time of invention to run the conveyors at any desired speed relative to one another as desired.

Claims 2-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al., Lin et al. and Mizokawa et al. as applied to claim 1 above, and further in view of Belna. Regarding claims 2-10 and 12 Bonora et al., Lin et al. and Mizokawa et al. teach the limitations of claim 1 as above, they do not teach the drive means for the second conveyor as being a linear drive. Belna US 4,624,617 teaches a transport system for wafers comprising:

a first tracked section (10) for moving wafers therealong;

said tracked section serving a plurality of process devices for processing wafers;

said track comprising:

a rail (28) for guiding a wafer carrier (20) therealong;

said carrier being driven by a solid state brushless linear motor comprising:

a drive coil (40) mounted to said track;

at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. with a linear drive as taught by Belna in order to move the carrier while at the same time limiting the amount

of wear debris generated thereby making it easier to maintain the cleanliness standards of the fabrication facility at acceptable levels.

Regarding claims 13 and 14 Bonora et al. further teaches moving the wafer carrier bidirectionally along the track along at least two different axes which are crosswise to one another. See figure 2.

Claims 21 -26 ,28-32, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al. in view of Belna. Regarding claims 21-25,28,29,31,32,45 and 46 Bonora et al. teaches at least one processing tool for processing semiconductor wafers;

a container (8) for holding at least one wafer therein for transport to and from the processing tool;

said container comprising a frame for securing the wafer therein and engagement surfaces for allowing the container to be captured and carried by another transport vehicle;

a transport section (10) for connecting the processing tool with other devices within a fabrication facility;

the transport section is not vehicle based and has tracks (12,14) which directly interface with the container for movably supporting the container, and allowing the container to move relative to the various devices in the facility;

wherein the tracks have a motor (48) therein for aligning the container with various track sections and devices in the facility. Bonora does not teach a portion of the

motor being mounted on the container. Belna teaches a transport system for wafers comprising:

a first tracked section (10) for moving wafers therealong;

said tracked section serving a plurality of process devices for processing wafers;

said track comprising:

a rail (28) for guiding a wafer carrier (20) therealong;

said carrier being driven by a solid state brushless linear motor comprising:

a drive coil (40) mounted to said track;

at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track;

wherein the portions of the motor mounted on the carrier defines a multi-axis drive motor;

wherein when the container is lifted from the track a corresponding portion of the motor goes along with it, thereby disconnecting it from the track mounted portion of the motor. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. with a linear drive as taught by Belna in order to move the carrier while at the same time limiting the amount of wear debris generated thereby making it easier to maintain the cleanliness standards of the fabrication facility at acceptable levels.

In regards to claims 26 and 30 the portion of the container taught by Bonora that reacts to the drive wheels is adapted to move the container along at least two crosswise axes.

Claims 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al. and Belna as applied to claim 21 above, and further in view of Lin et al. Bonora et al. and Belna teach the limitations of claim 21 above, they do not teach using a separate conveying system. Lin et al. teaches a wafer processing facility comprising:

at least two stocking devices (30) each with an input/output of port;

a first overhead transport system for moving wafer containers (44) about the facility;

a second transport system (52) for moving containers between the stockers;

wherein said first transport system comprises a vehicle (36) that runs along a first track system (38);

wherein the second transport system has a means for aligning a container held by either transport system with the opposing transport system;

wherein the two transport sections are parallel at portions of their runs. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. and Belna with a secondary transport system as taught by Lin et al. in order to alleviate bottlenecks in the delivery system without having to resort to a series of expensive stockers.

Response to Amendment

The amendments to the claims filed on June 26, 2009 have been entered into the record.

Allowable Subject Matter

Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art of Belna does not teach or suggest placing crosswise magnets on the carrier such that the carrier may be moved along two different axes.

Response to Arguments

Applicant's arguments filed June 26, 2009 have been fully considered but they are not persuasive. Regarding the anticipation rejection of claim 44 the Bonora et al. reference teaches configuring the various sections to meet a users desires. As such this would entail a modular system that can be put together and taken apart. It is further inherent in the reference that each section will have a particular length.

Regarding the desirability of certain systems espoused by Bonora et al. they is no teaching that a system such as Lin's can not work, but rather it is challenging. Because something is difficult does not make it counter intuitive. Regarding the alignment of the two transport devices at various locations this is taught by Lin. The first transport of Lin the OHT is aligned with a second transport (52) such that when a container is located on one transport device only the other need move for alignment at any of the various points where they overlap. This capability would meet the arguments against the rejection of claim 34 as well.

Regarding the rejection of claim 4 Belna teaches that the transport sled has pockets with portions of the motors mounted therein. As such they are molded into cavities in the bottom of the car meeting the broad limitations of claim 4.

Regarding claim 5 no specific arguments have been made. As the claim is drawn to subject matter different from claim 4 the arguments are not persuasive.

Regarding claims 13 and 14 the examiner does not assert that Bonora et al. teaches the limitations of claim2 alone. Rather he asserts that Bonora et al. teaches a system which moves the cassette bidirectionally which they do. The claim is not rejected under Bonora alone and arguing the references separately does not address the true rejection. Looking at the Bonora reference the system has rails running in both the X and Y axis, each of which has a bidirectional capability.

Regarding the combination of Bonora et al. and Belna regarding claim 21-26,28-32,45 and 46 the applicant is misreading the rejections. Again only the linear drive of Belna is being incorporated into the tracked system of Bonora. The tracks and associated position system of Belna would not be incorporated as they have corresponding structure for aligning the cassettes in the Bonora et al. reference. Belna is used only to replace the belted drive system of Bonora with a linear drive which would produce less debris.

Any new rejections presented were a result of amendments made in the last response by the applicants representative.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles A. Fox whose telephone number is 571-272-6923. The examiner can normally be reached on 7:00-4:00 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saul Rodriguez can be reached on 571-272-7097. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles A. Fox/
Primary Examiner, Art Unit 3652